A9

IS INTERMITTENT INTRAPLEURAL ANALGESIA SAFE AND EFFECTIVE FOLLOWING THORACOSCOPIC ANTERIOR SCOLIOSIS CORRECTION?

[1,2]Maree T. Izatt, [1]Stephen A. Morris, [1,2]Clayton J. Adam, [1,2]Robert D. Labrom and [1,2]Geoffrey N. Askin

[1]QUT/Mater Paediatric Spine Research Group, Queensland University of Technology and Mater Research, QLD
[2]Institute of Health and Biomedical Innovation, Queensland University of Technology, QLD
email: m.izatt@qut.edu.au

INTRODUCTION

Thoracoscopic anterior instrumented fusion (TASF) is a safe and viable surgical option for corrective stabilisation of progressive adolescent idiopathic scoliosis (AIS) [1-2]. However, there is a paucity of literature examining optimum methods of analgesia following this type of surgery.

Epidural analgesia is the gold standard for pain relief after an open thoracotomy or posterior surgical approach to the thoracic spine but epidural insertion is challenging with potential risks due to the scoliotic bony deformities. At times epidural insertion may be impossible due to the concomitant flattening or reversal of the normal sagittal curves in scoliosis patients. This difficulty resulted in the intrapleural analgesia technique being adapted for use at our centre and used thereafter for all TASF procedures.

The aim of this study was to identify; if local anaesthetic bolus via an intrapleural catheter provides effective analgesia following thoracoscopic scoliosis correction; what pain levels may be expected; and any adverse effects associated with the use of intermittent intrapleural analgesia at our centre.

METHODS

A subset of the most recent 80 patients from a large single centre consecutive series of 201 patients (April 2000 to present) who had undergone TASF had their medical records reviewed. 32 patients met the inclusion criteria for the analysis (i.e. pain scores must have been recorded within the hour prior and within two hours following an intrapleural bolus being given). All patients received an intrapleural catheter inserted during surgery, in addition to patient-controlled opiate analgesia and oral analgesia as required. After surgery, patients received a bolus of 0.25% bupivacaine every four hours via the intrapleural catheter. Visual analogue pain scale scores were recorded before and after the bolus of local anaesthetic and the quantity and time of day that any other analgesia was taken, were also recorded.

RESULTS AND DISCUSSION

28 female and four male patients (mean age 14.5 ± 1.5 years) had a total of 230 boluses of local anaesthetic administered intrapleurally, directly onto the spine, in the 96 hour period following surgery. Pain scores significantly decreased following the administration of a bolus ($p<0.0001$), with the mean pain score decreasing from 3.66 to 1.83. The quantity of opiates via patient-controlled analgesia after surgery decreased steadily between successive 24 hours intervals after an initial increase in the second 24 hour period when patients were mobilised. One intrapleural catheter required early removal at 26 hours postop due to leakage; there were no other associated complications with the intermittent intrapleural analgesia method.

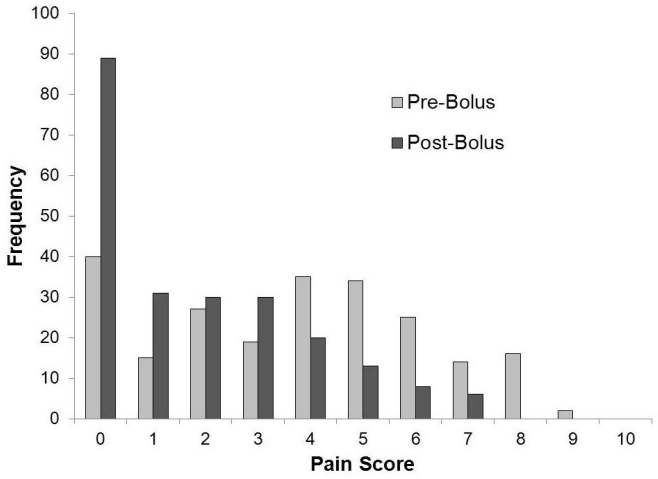

Figure 1: Frequency distribution graph showing each pain score (Visual Analogue Scale 1-10) before and after administration of the local anaesthetic bolus following thoracoscopic anterior spinal fusion surgery (total 230 boluses prior to removal of intrapleural catheter) in 32 patients.

CONCLUSIONS

Local anaesthetic administration via an intrapleural catheter is a safe and effective method of analgesia following thoracoscopic anterior scoliosis correction. Effective analgesia after thoracic surgery is desirable to encourage good respiratory effort, better ventilatory mechanisms and gas exchange and decreased incidence of atelectasis. It also assists with the early mobilisation of these patients, ideally on Day 1. Post-operative pain following anterior scoliosis correction was decreased significantly with the administration of regular local anaesthetic boluses and can be reduced to 'mild' levels by combined analgesia regimes. The intermittent intrapleural analgesia method was not associated with any adverse events or complications in the full cohort of 201 patients.

REFERENCES

1. Izatt MT, et al. *Spine* 31:2469-2477, 2006.
2. Newton PO, et al., *JBJS* 90:2077-2089, 2008.